



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,929	04/03/2002	William Crossland	3826.01 (AL1)	1238

7590 10/22/2003
Allston L Jones
Peters Verny Jones & Schmitt
385 Sherman Avenue Suite 6
Palo Alto, CA 94306-1840

EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,929

Applicant(s)

CROSSLAND ET AL.

Examiner

Tarifur R Chowdhury

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39-43 is/are allowed.
- 6) ☒ Claim(s) 31-34, 36, 37 and 44 is/are rejected.
- 7) ☒ Claim(s) 35 and 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 31-33 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Robinson et al., (Robinson), EP-A-0 878 729.**
5. Robinson discloses an optical device comprising an integrated multiphase spatial light modulator (SLM) (Figs. 7-9) for spatial phase modulation (col. 10, lines 13-17) of unpolarized light of a predetermined wavelength, the integrated spatial light modulator having a substantially planar liquid crystal layer (numeral 18 in Figs. 7-9), a layer reflective of the light of the wavelength (numeral 15 in Figs. 7-9) and a wave-plate layer providing an optical retardance of $(2n + 1)\lambda/4$ (numeral 16 in Figs. 7-9 and col. 7, lines 5-9), wherein the LC layer has two opposed faces (Figs. 7-9) and being disposed and

Art Unit: 2871

configured to provide an out of plane tilt in response to a voltage applied between the faces (Fig. 9 and col. 10, lines 5-11) and the liquid crystal layer (18) being spaced from the reflective layer (15) by the wave-plate layer (16), wherein the integrated SLM comprises an integrated array (col. 8, lines 53-56) of phase modulating elements (col. 10, lines 13-17) and voltage application circuitry (the implicitly present circuitry that provides the voltages V1-V3 in Fig. 9) for applying desired voltage across the LC layer whereby the LC layer has desired values of out of plane tilt (col. 10, lines 5-17); wherein the integrated multiphase SLM comprises an array of electrodes (the "reflecting addressing electrodes" 15 in Figs. 7-9 form an array of electrodes), each of the electrodes being associated with a respective portion of the liquid crystal layer to define the phase modulating element (see portions 40,41, 42 in Fig. 9), the electrodes being such that application of voltage to each electrode causes the portion of the liquid crystal layer associated with the electrode to have a specific value of the out-of-plane tilt (see Fig. 9 and col. 10, lines 28-39) and wherein the voltage application circuitry is adapted to apply voltages to the array of electrodes (Fig. 9, col. 10, lines 28-39) for varying a deflection angle of light incident upon the array of phase modulating elements (col. 10, line 17).

Accordingly, claim 31 is anticipated.

As to claims 32 and 33, Robinson also discloses (col. 7, line 13) that the liquid crystal layer is a nematic liquid crystal layer and that the liquid crystal layer is a pi-cell (col. 13, lines 17-26).

As to claim 44, Robinson also discloses (col. 1, lines 7-10; col. 2, lines 11-16; col. 4, lines 51-56 and col. 10, lines 15-17..) Therefore, since the method of routing the light beam on an array of phase modulating elements is merely a list of providing the element and applying the beam to the element, and each modulating element must be formed to make the device, the method would be inherent to the device.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 34, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson as applied to claims 31-33 and 44 above and in view of Mears et al., (Mears), USPAT 5,930,012.**

9. As to claim 34, 36 and 37, Robinson differs from the claimed invention because he does not explicitly disclose a second integrated SLM being disposed with respect to the first SLM for receiving light from the first SLM to route the light.

Mears discloses in an example not drawn (see first example, col. 2, lines 7-17) an optical switch with two SLMs (this switch is the two SLMs version of the second example having the folded layout drawing in Fig. 4), wherein the switch comprises input and output optical fibers (col. 2, lines 27-32), two SLMs (col. 2, lines 12-17) onto which holograms are addressed for coupling selected inputs to selected outputs (col. 1, lines 62-67 and col. 5, lines 43-51).

Although the SLMs used in Mears are already polarization sensitive, it would have been obvious to one of ordinary skill in the art to replace Mears transmissive SLM with the reflective SLM disclosed in Robinson because of the generally greater integration (through a better filling factor) achieved by reflective SLMs.

Accordingly, claims 34, 36 and 37 would have been obvious.

Allowable Subject Matter

10. Claims 39-43 are allowed.

11. Claims 35 and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2871

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.



T. Chowdhury
Primary Examiner
Technology Center 2800

TRC
October 16, 2003